Broadband Networks Need to Plan For Gigabits, Not Megabits

By James Carlini, an Adjunct Professor at Northwestern University and President of Carlini & Associates

Depending on your current definition of broadband network connectivity, you might want to update your frame of reference.

Did you know at the beginning of 2008 that Japan announced its objective for broadband connectivity is 10 gigabits by 2010? In some recent discussions I have had, some industry pundits think 1 gigabit is too high to achieve.

A couple megabits or even 30 Mbps to 40 Mbps to the premise as a design goal is an obsolete objective unless you are aiming us into a third-rate infrastructure for the future.

I have been saying within my columns for years and at national conferences and regional seminars (like the recent one with SimpleTel in Madison, Wis. featuring Dantel, Connect802 and Matisse Networks) that broadband connectivity today means providing gigabit speeds. Period.

The only people who don't want to hear this are those tied to products and network services that have sub-gigabit maximums. These people don't want to hear that what they're supporting is obsolete and not globally competitive. Why is this such a hard thing for some industry executives and supposed network infrastructure vendors and designers to accept?

I understand how Christopher Columbus must have felt in front of a science academy while trying to tell all the learned experts and academics that the Earth is round instead of flat. Am I that far on the leading edge? I really don't think so, but after talking with some, I feel like Captain Kirk talking with Fred Flintstone.

Are You Beating a Dead Horse?

Last week I spoke at the Gaylord Palms in Orlando at the annual Building Industry Consulting Services International (BICSI) winter conference. My presentation on intelligent business campuses discussed new high-tech parks that must be supported with multiple network carriers as well as multiple gigabit-speed network infrastructure. The talk was well received.

There were still a couple attendees who bristled when I said we must get into gigabit network infrastructures immediately and anything in the planning stages today should reflect an infrastructure that can handle multiple gigabit speeds on day one.

The real experts came up and agreed that we need to have gigabit speeds within city network infrastructures and the issue of broadband connectivity being defined as gigabit speeds today is right on target. It was refreshing to hear that at least some of today's experts bought into the concept.

How many times must I point out that just putting DSL over copper is like putting a vinyl top on a stagecoach and trying to sell it as a "fast alternative" in an era of the space shuttle? Less and less people are buying into copper-based capabilities when they see other countries talking about multiple gigabit speeds while we are debating whether or not 20 Mbps to 30 Mbps on copper is adequate for the next five to seven years.

In my seminar, we also debunked some of the pseudo-expert euphoria about installing a T-1 into a business and claiming that it made their network connectivity "really up to date". Some basic connectivity questions were asked as part of the presentation including this one: Did you know when the first T-1 was installed? The answer is 1963.

That question stumped just about everyone in the room. Many thought it was much later in the 1980s. Anyone who thinks they're state of the art because they just installed a T-1 really just installed

technology that has been around for 45 years.

Critical Infrastructure Throughout the Ages

Infrastructure has always played an important part in developing and sustaining global commerce. In all stages of economic development and trade throughout the ages, various layers of infrastructure helped build new commerce. My presentation pointed out the historical layers of critical infrastructure for commerce and trade.

All of these examples created new routes for commerce, transportation and trade.

We have built trade routes to develop and sustain regional viability. Now with the Internet and other network services, trade routes have become electronic. Today, broadband connectivity is the latest layer of critical infrastructure that's needed to provide new electronic trade routes to support economic development and regional sustainability.

A slide from Matisse Networks shows where connectivity is going. It is a switching configuration that maximizes fiber connectivity into multiple gigabit segments. The switching gear can dynamically allocate bandwidth as network traffic is routed around the metropolitan area.

Nodes that provide up to 160 Gbps on a metropolitan-area network are the latest iteration of urban connectivity using fiber.

It is a big step beyond SONET. It won't be took long until 10 Gbps will be the norm and fractional gigabit services will be available. This will hopefully put an end to the discussions by those contemplating slower networks that don't have the raw bandwidth to sustain major metropolitan networks.

If you are truly building for the future, no one should be talking about megabit speeds to subscribers. If you are truly building for the future, you are building multiple gigabit speeds with a minimum of 1 gigabit to a subscriber.

New Mantra

"Do not quote a megabit rate when discussing network infrastructure after 2008." This should be adopted by anyone who professes to know what the typical metropolitan network infrastructure should evolve into and states and metropolitan areas should be looking at this for economic growth and regional sustainability.

Anyone with less than a gigabit as a goal for network infrastructures must be uninformed or trying to protect an obsolete product or service. In either case, they are not up to speed (pun intended).

Please be sure to check out his blog at CarlinisComments.com.

Posted on Jan 29, 2008
Filed in: General

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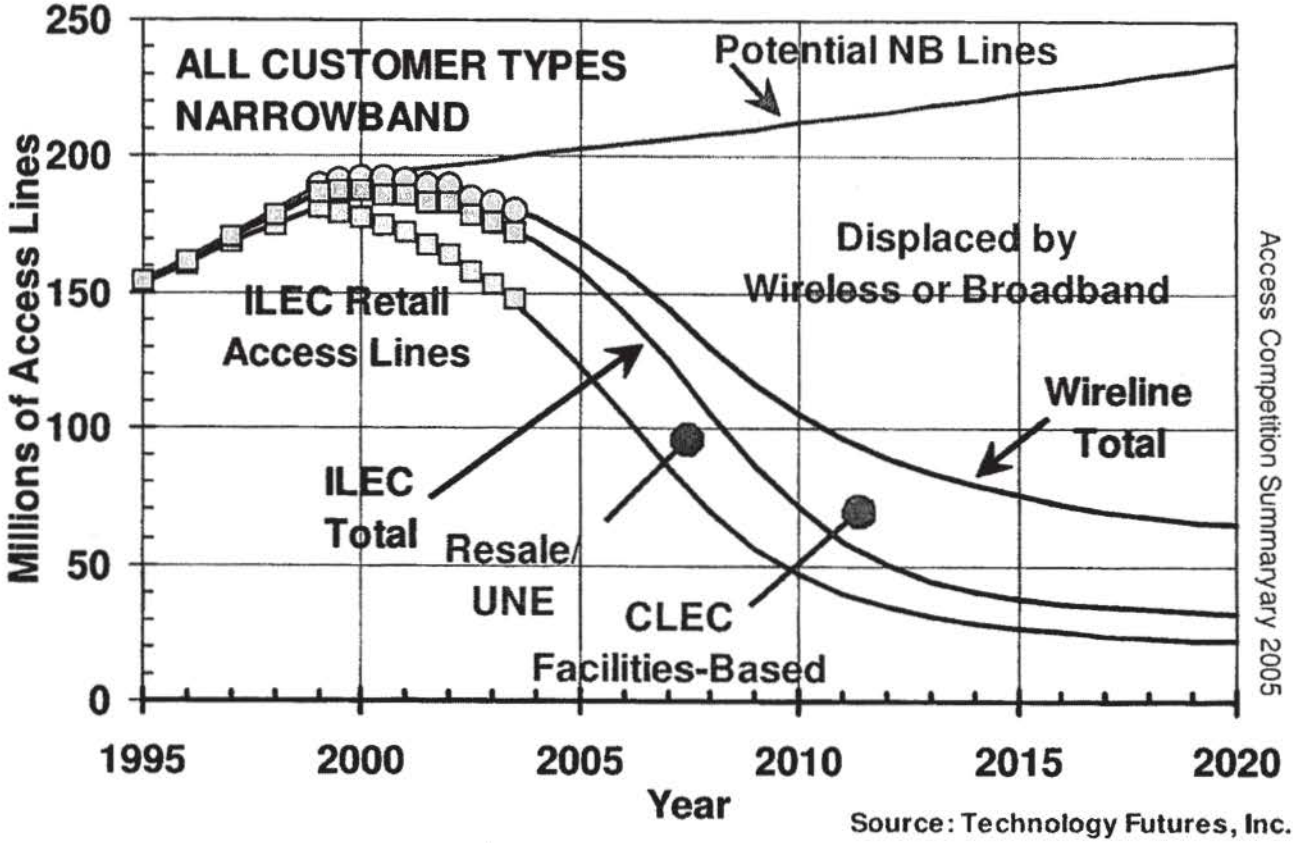
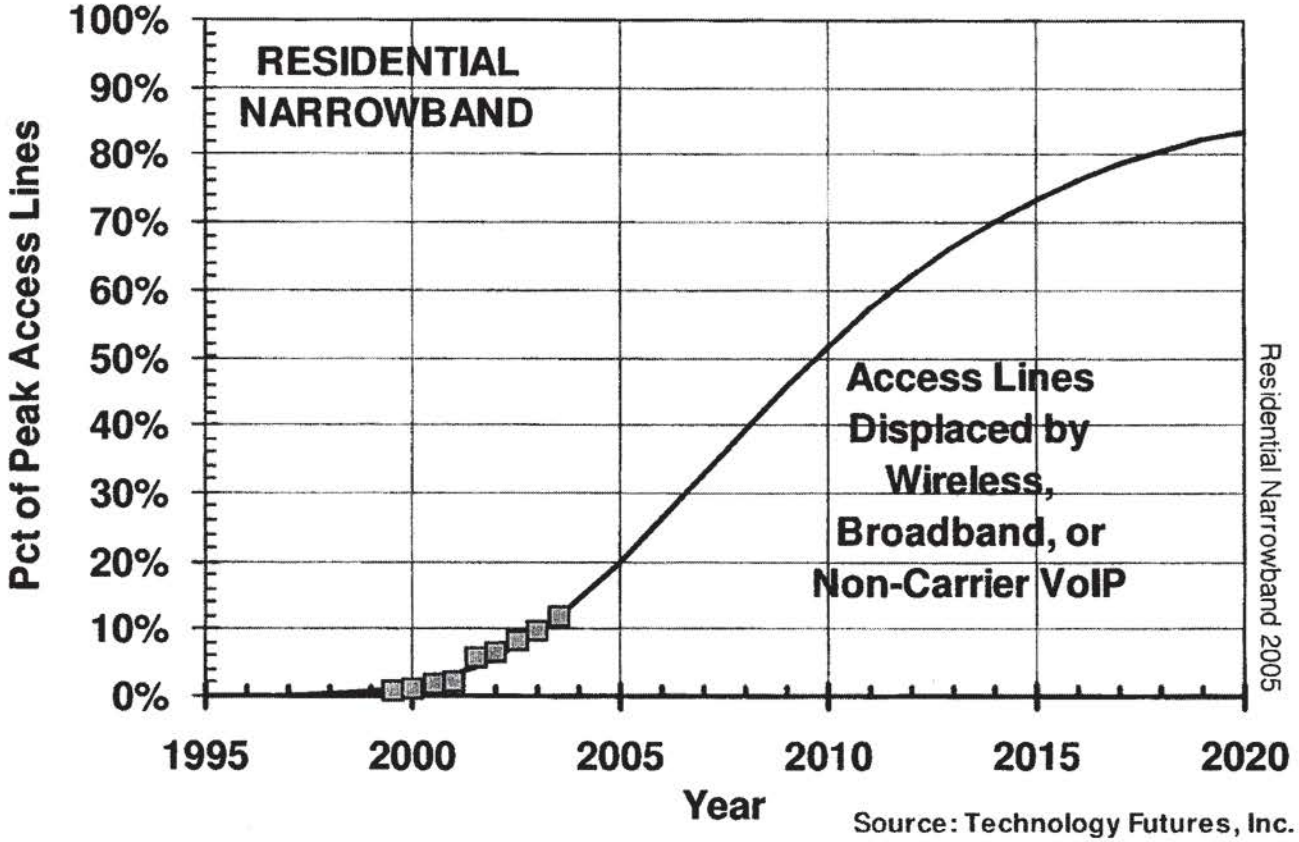
Narrowband Access Lines by Carrier Type



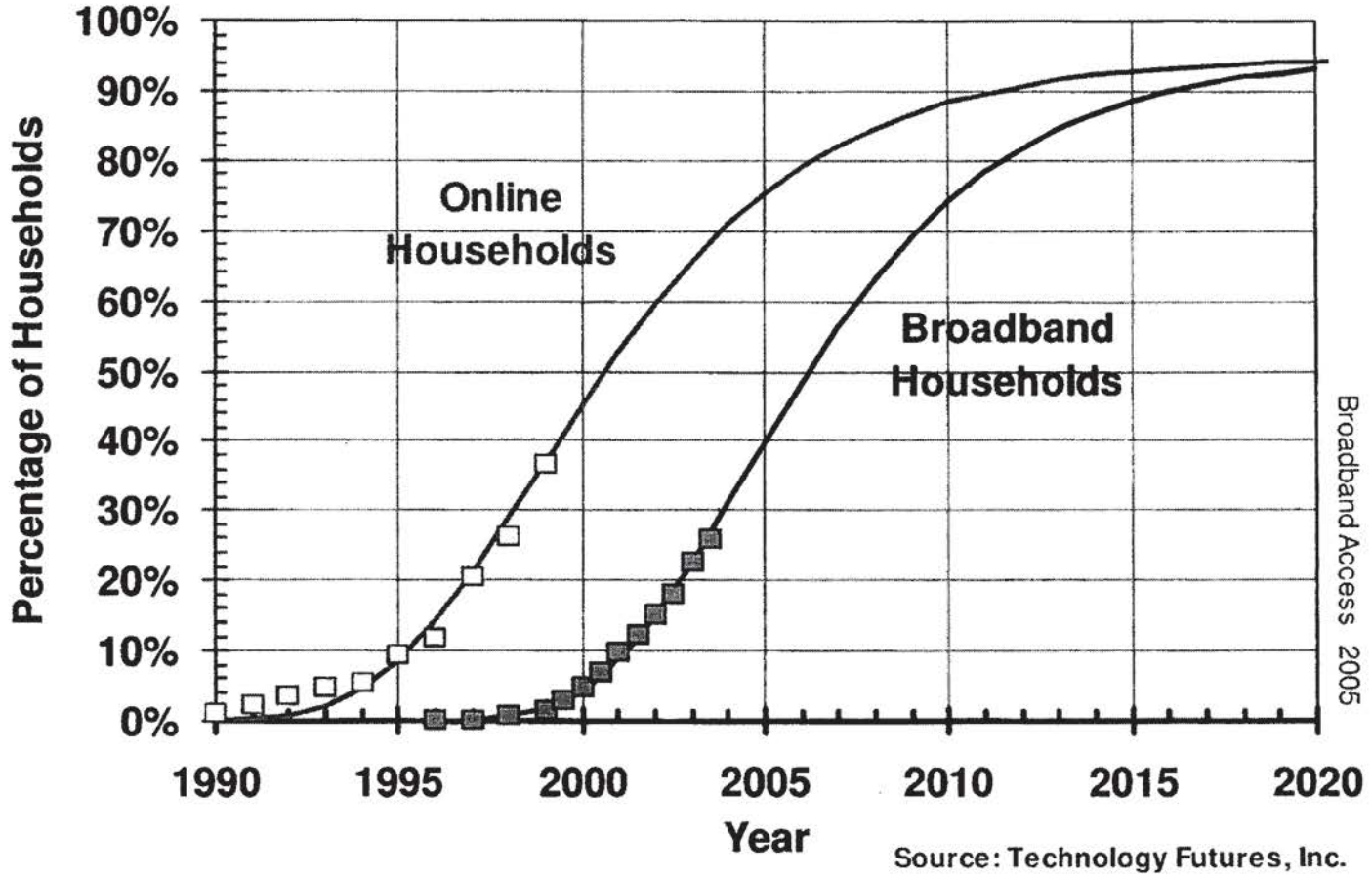
Source: Technology Futures, Inc.

Wireline Access Line Displacement

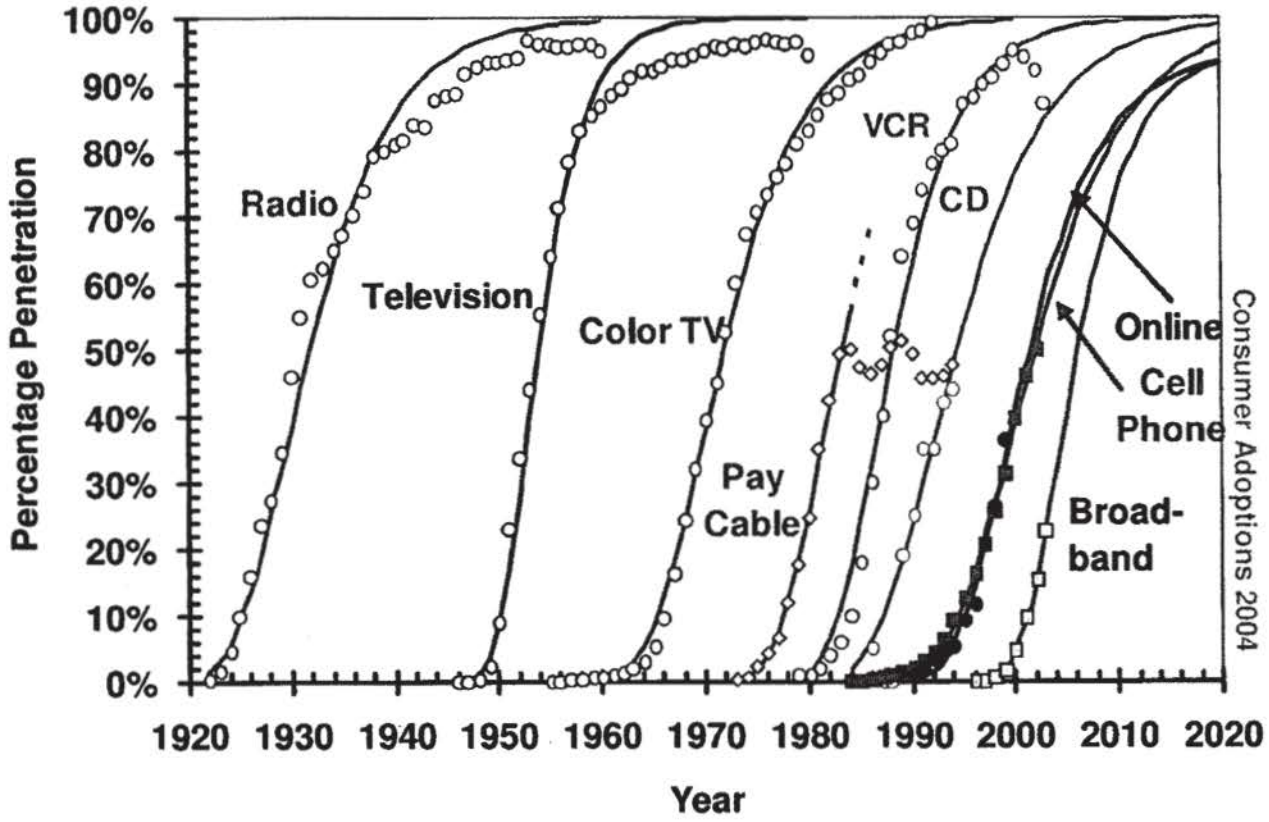


Source: Technology Futures, Inc.

Broadband Households

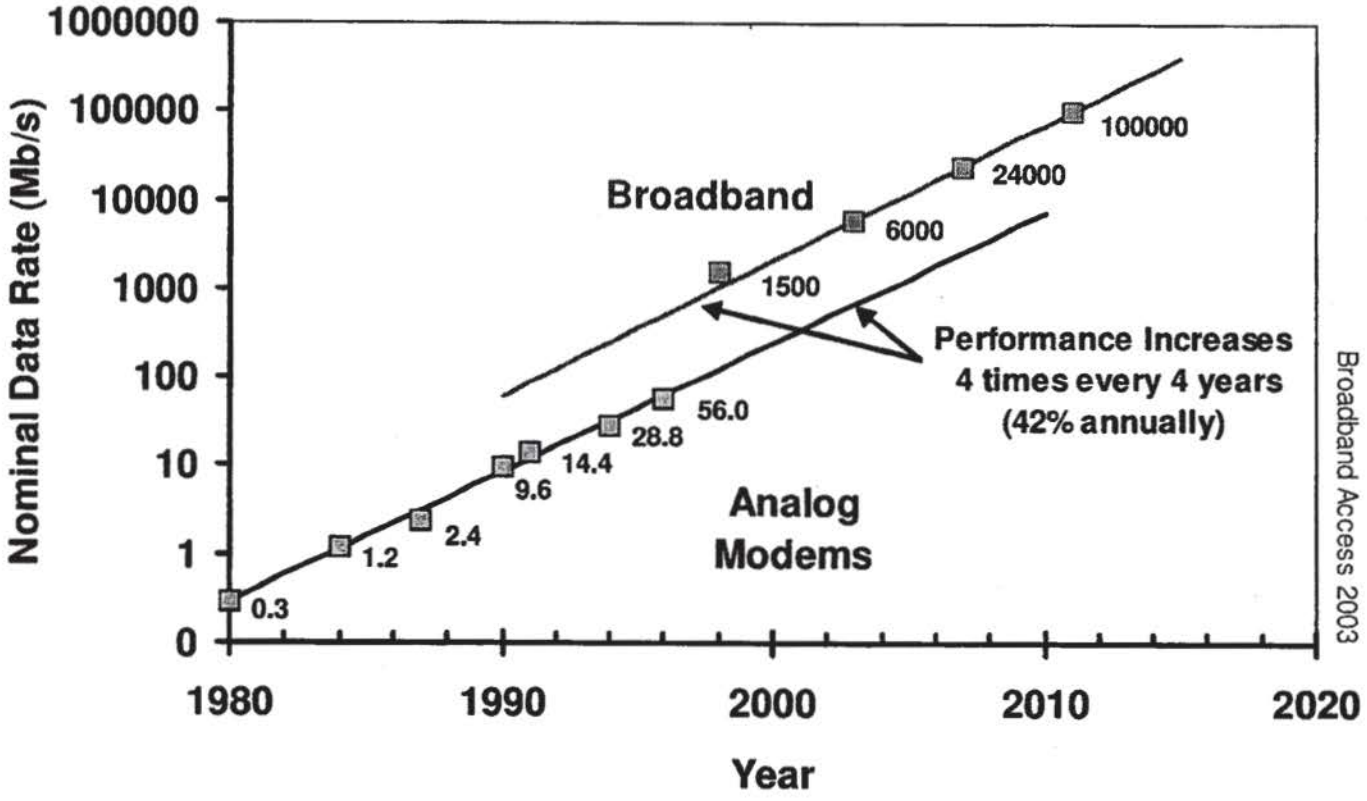


Examples of Consumer Adoptions (**Gompertz Model**)



Source:Technology Futures, Inc.

Trend in Residential Data Rates



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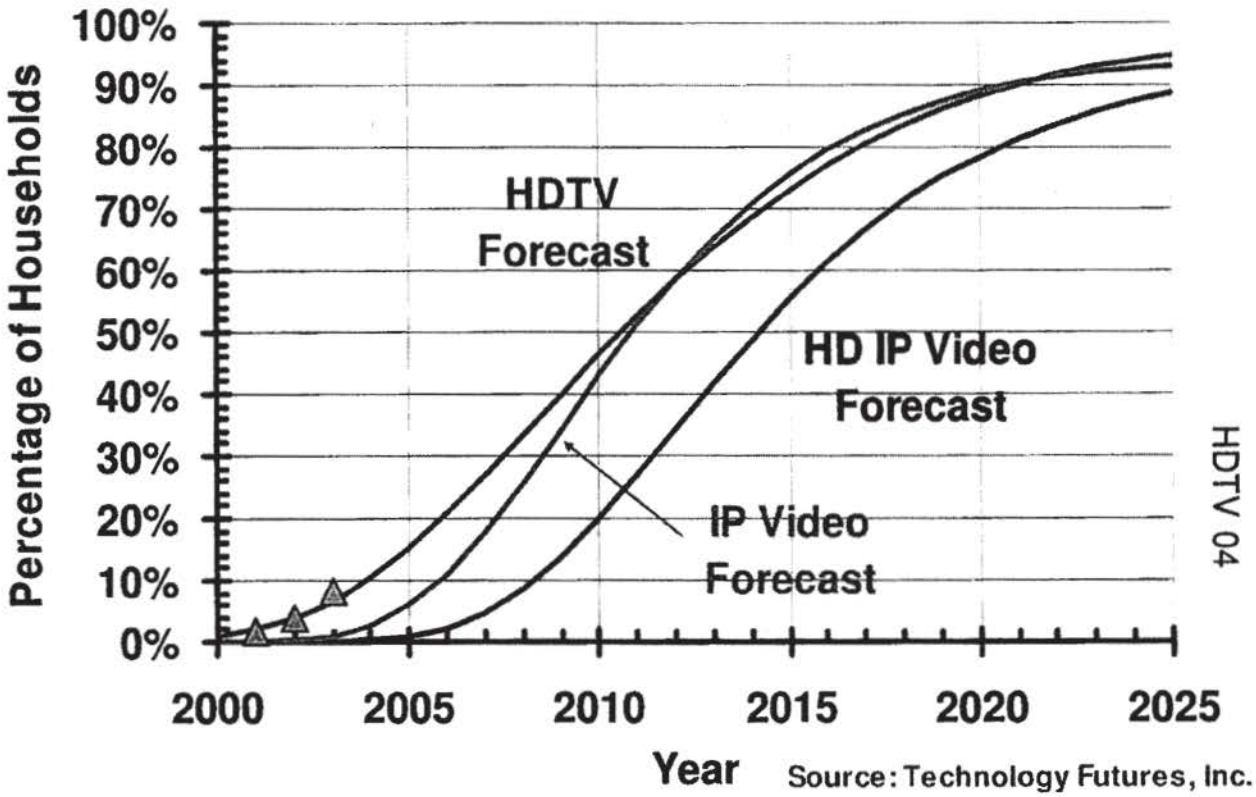
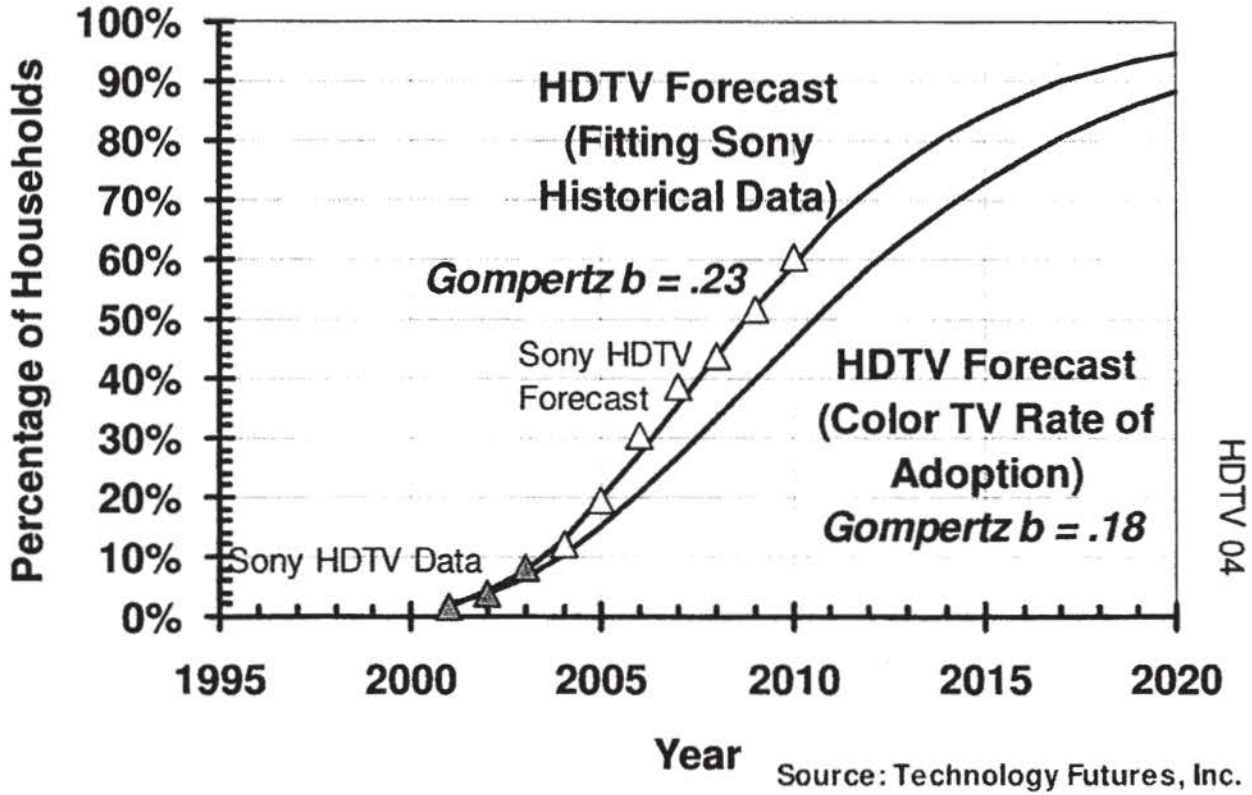
Forecast of U.S. Households Using High-Definition IP Video



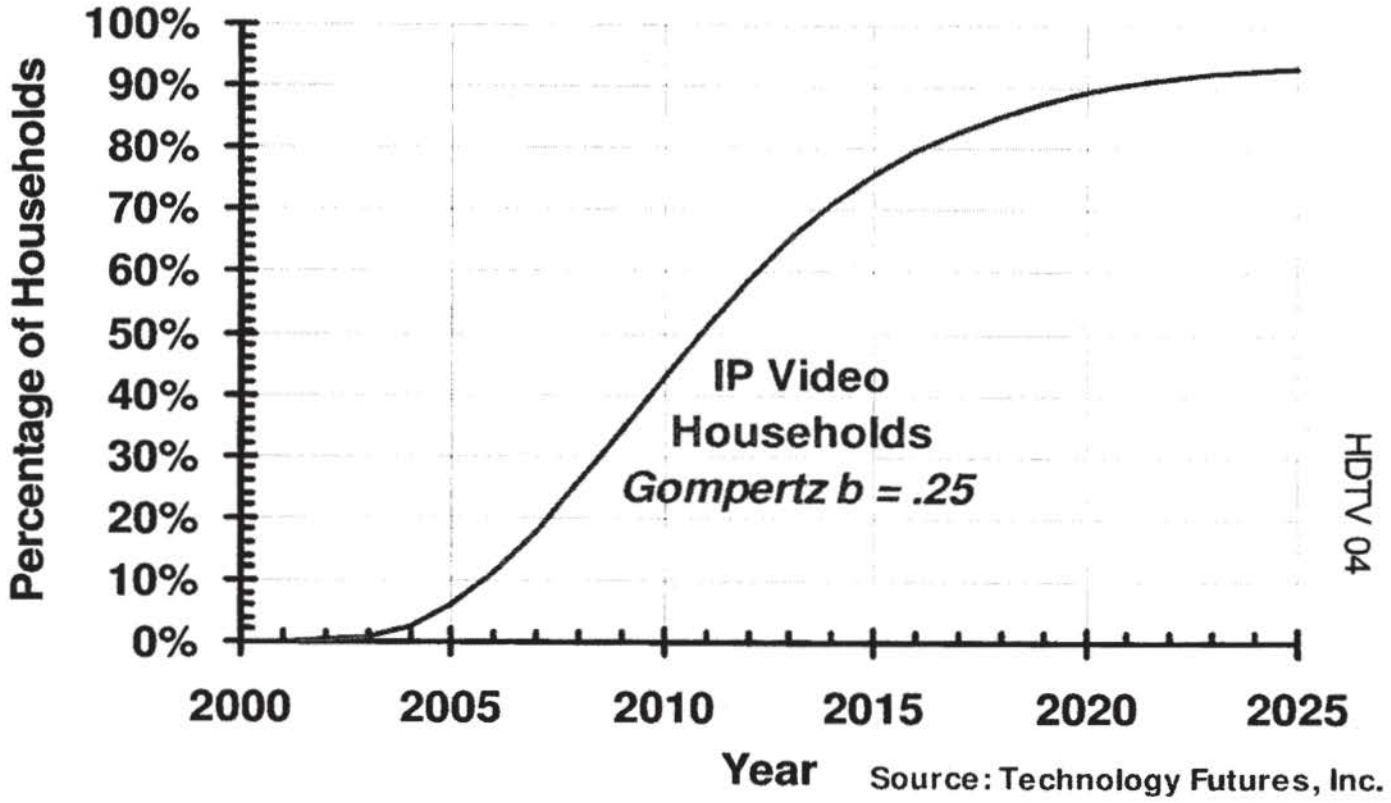
Source: Technology Futures, Inc.

High Definition Television – A Kev Bandwidth Driver



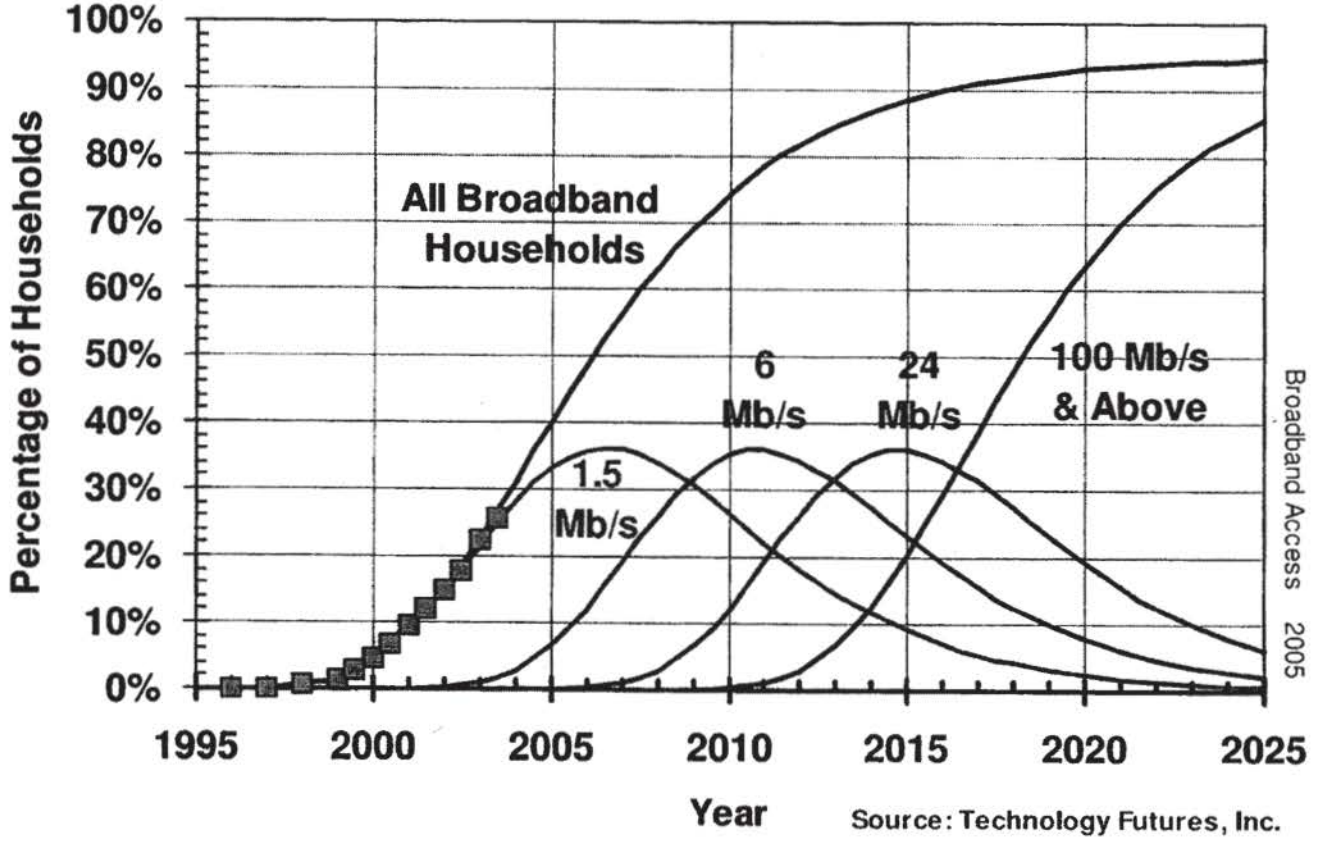
Source: Technology Futures, Inc.

Forecast of U.S. Households using IP Video



Source: Technology Futures, Inc.

Broadband Households by Nominal Data Rate



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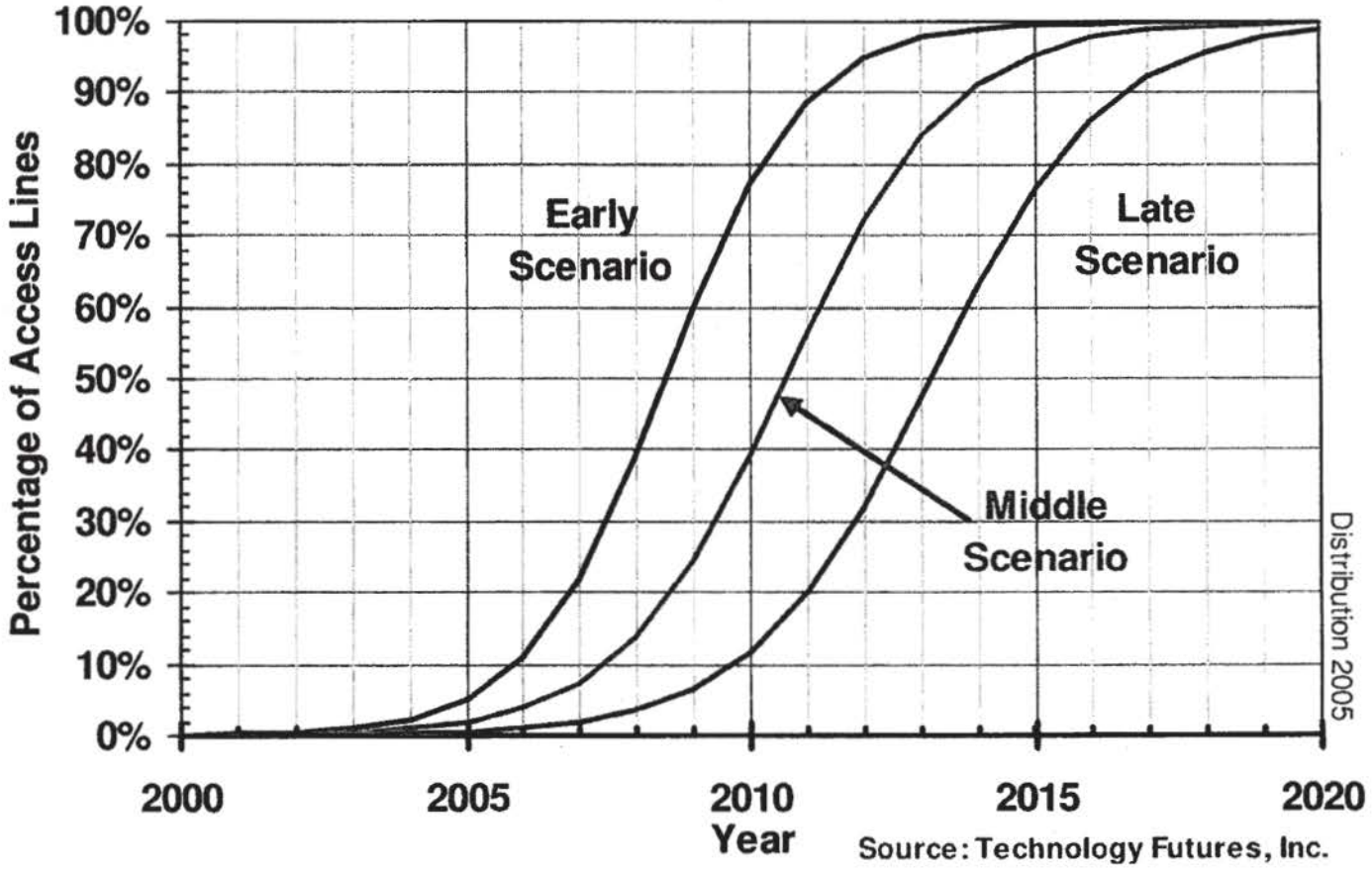
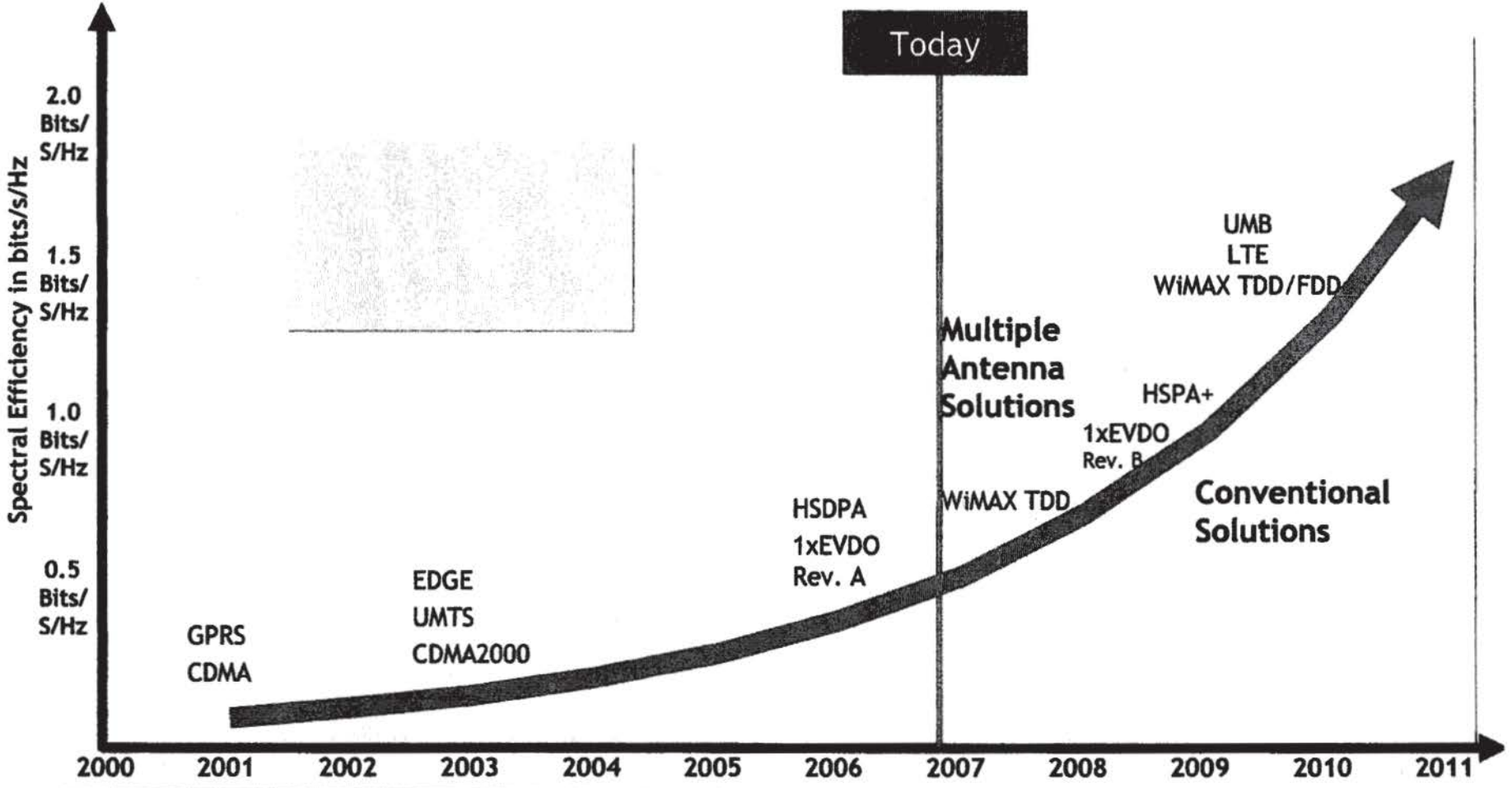
Broadband Fiber in the Loop



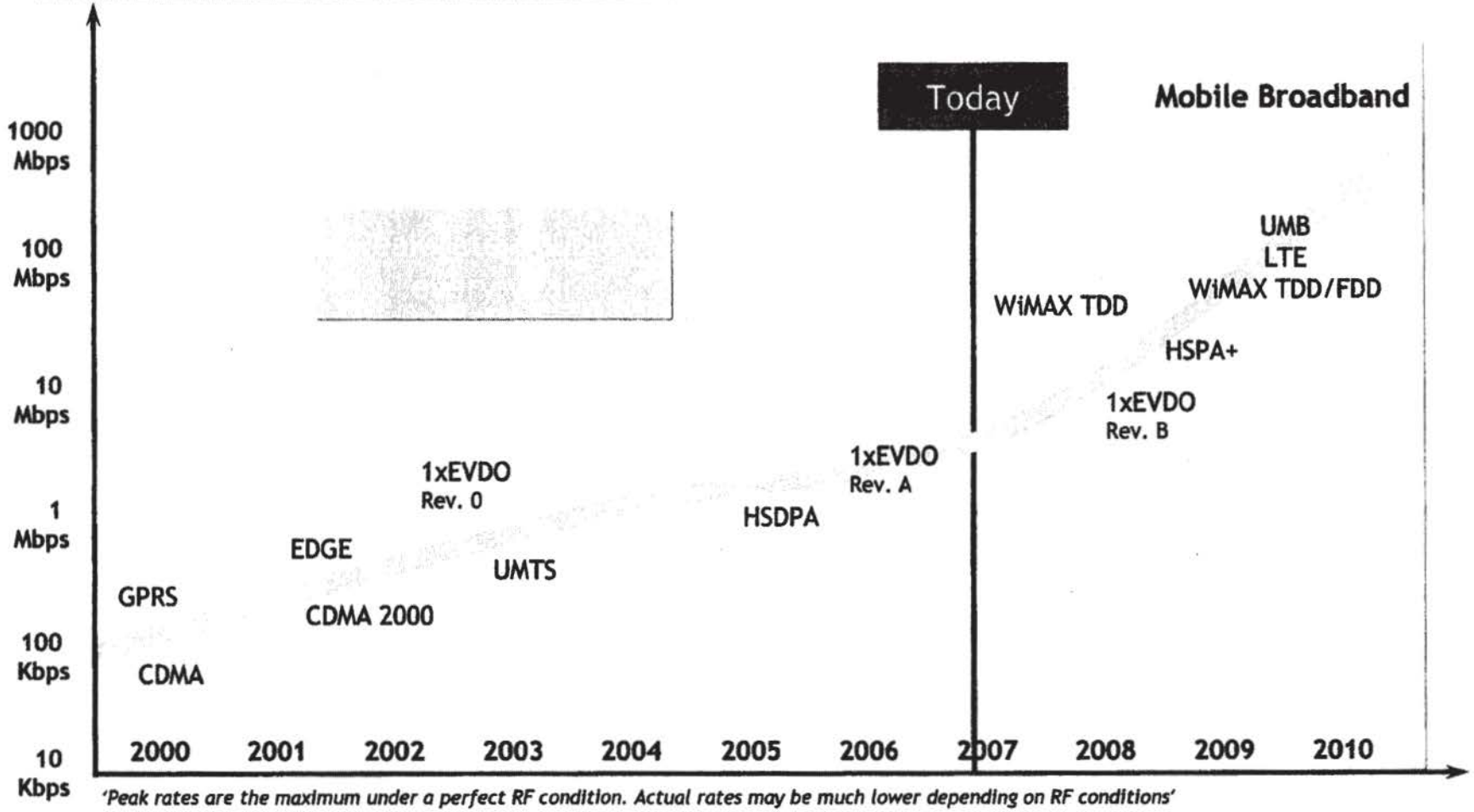
... And Provide Similar Improvements in Spectral Efficiency



Whatever the technology, Alcatel-Lucent can provide the network intelligence, performance, speed and throughput required to deliver next generation, high speed mobile data services

Alcatel-Lucent

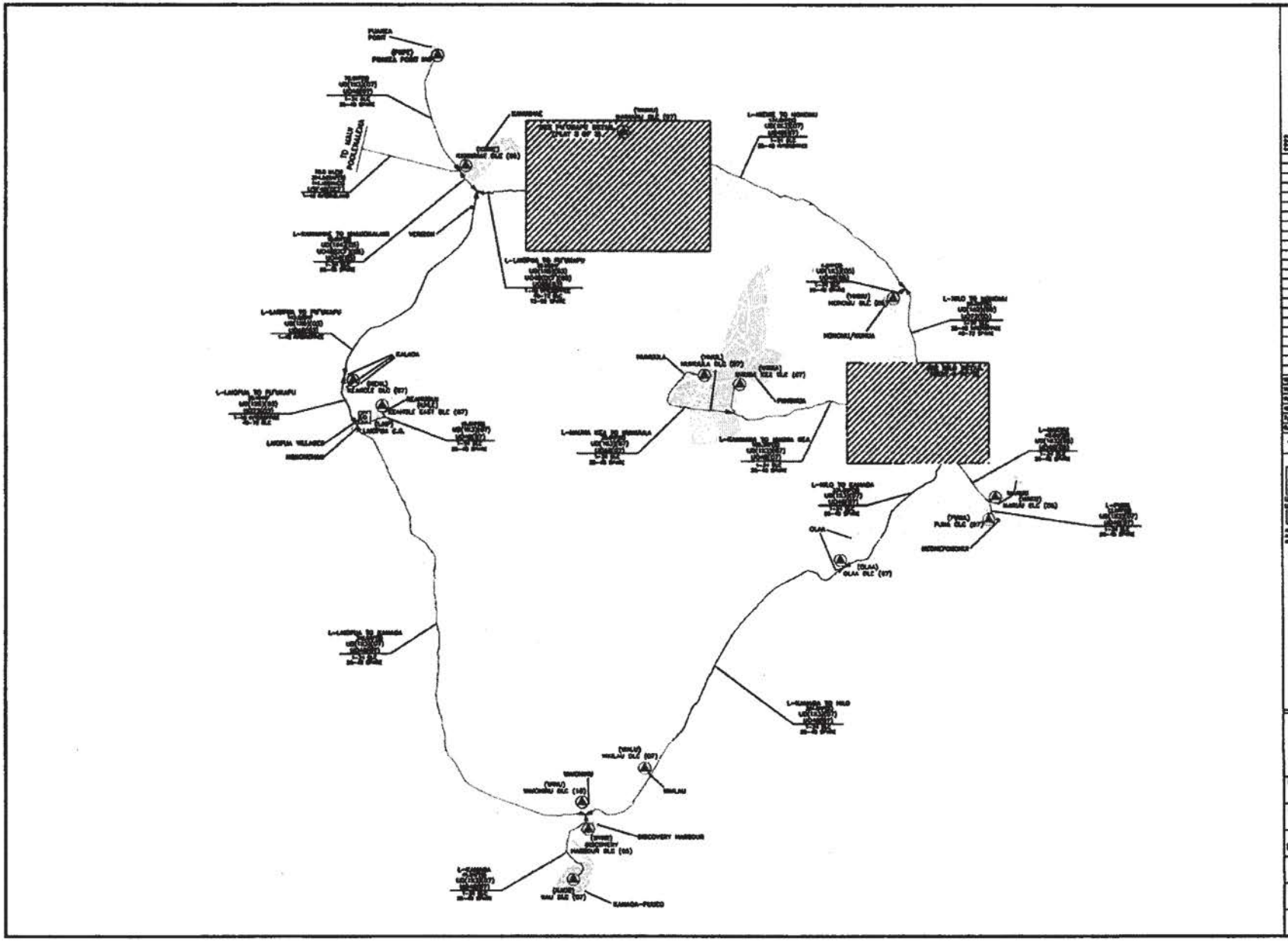
And Deliver Similar Speed and Performance...



'Peak rates are the maximum under a perfect RF condition. Actual rates may be much lower depending on RF conditions'

As bandwidth becomes ever faster and cheaper, ubiquitous broadband coverage becomes a reality...

Alcatel·Lucent



Sandwich Isles Communications, Inc.
A Hawaiian Company

ISLAND:	HAWAII
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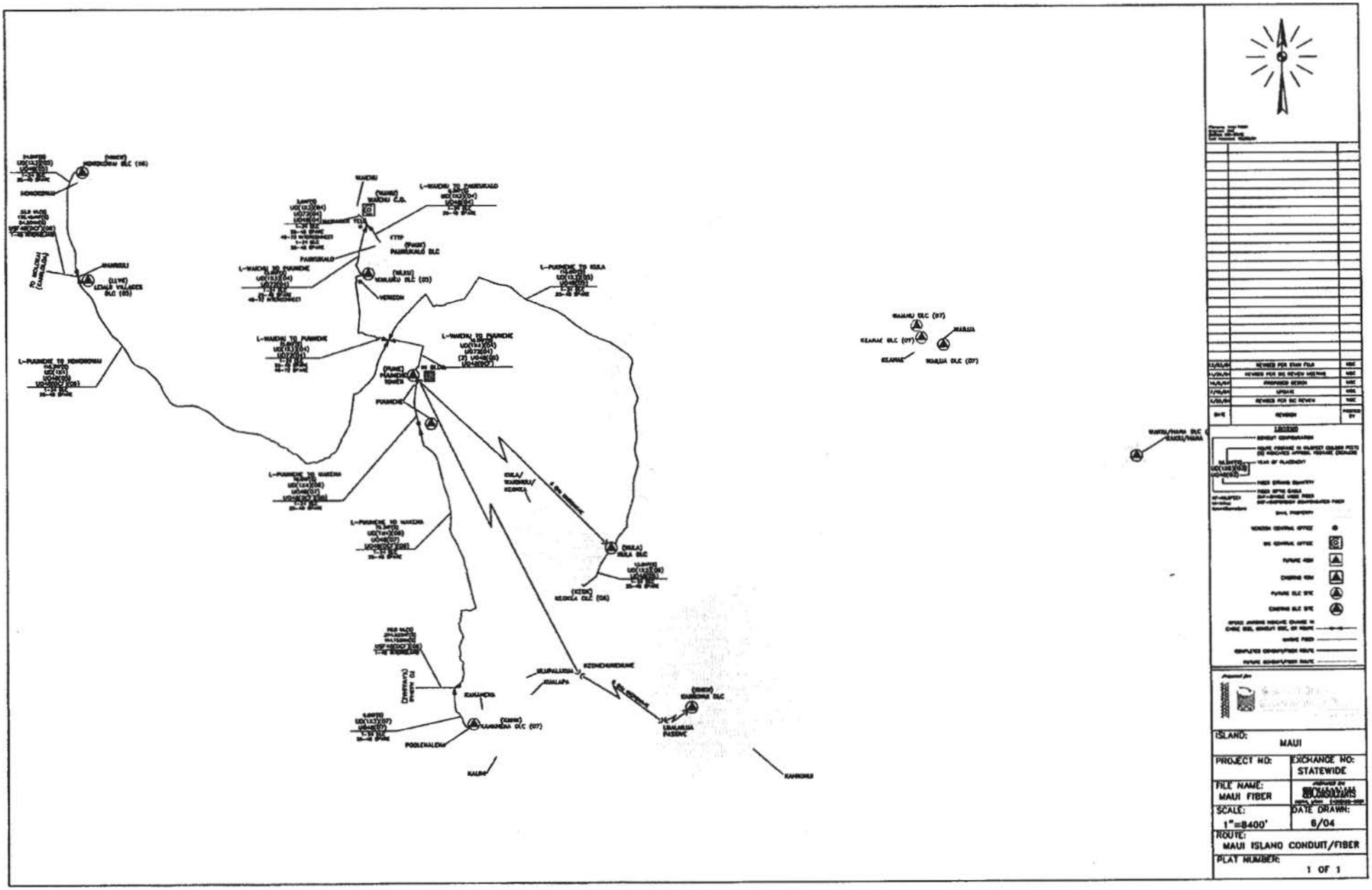

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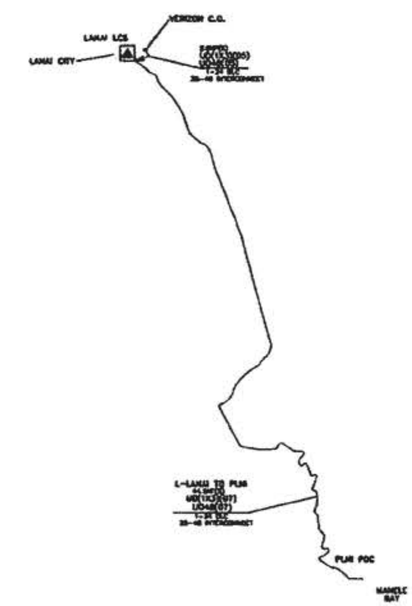

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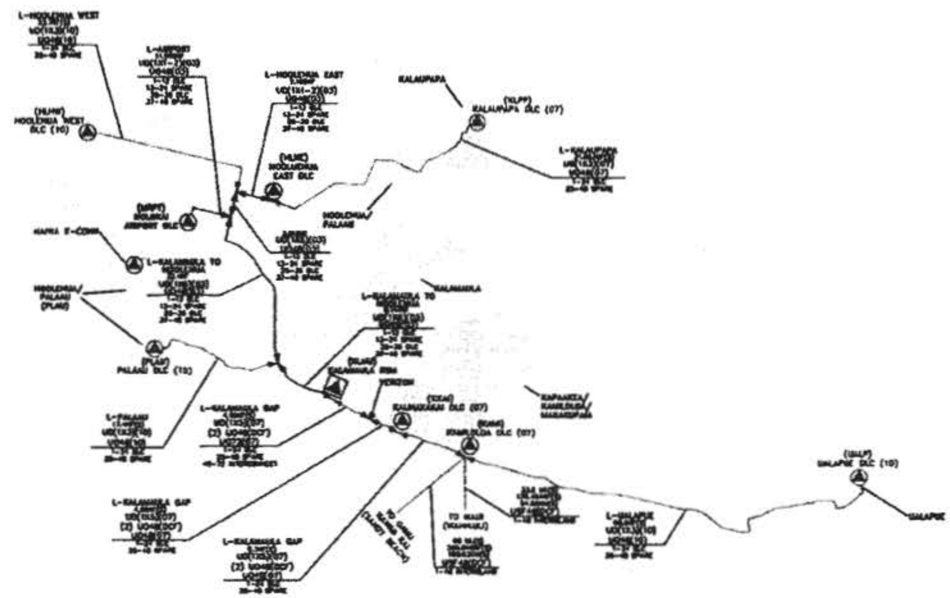

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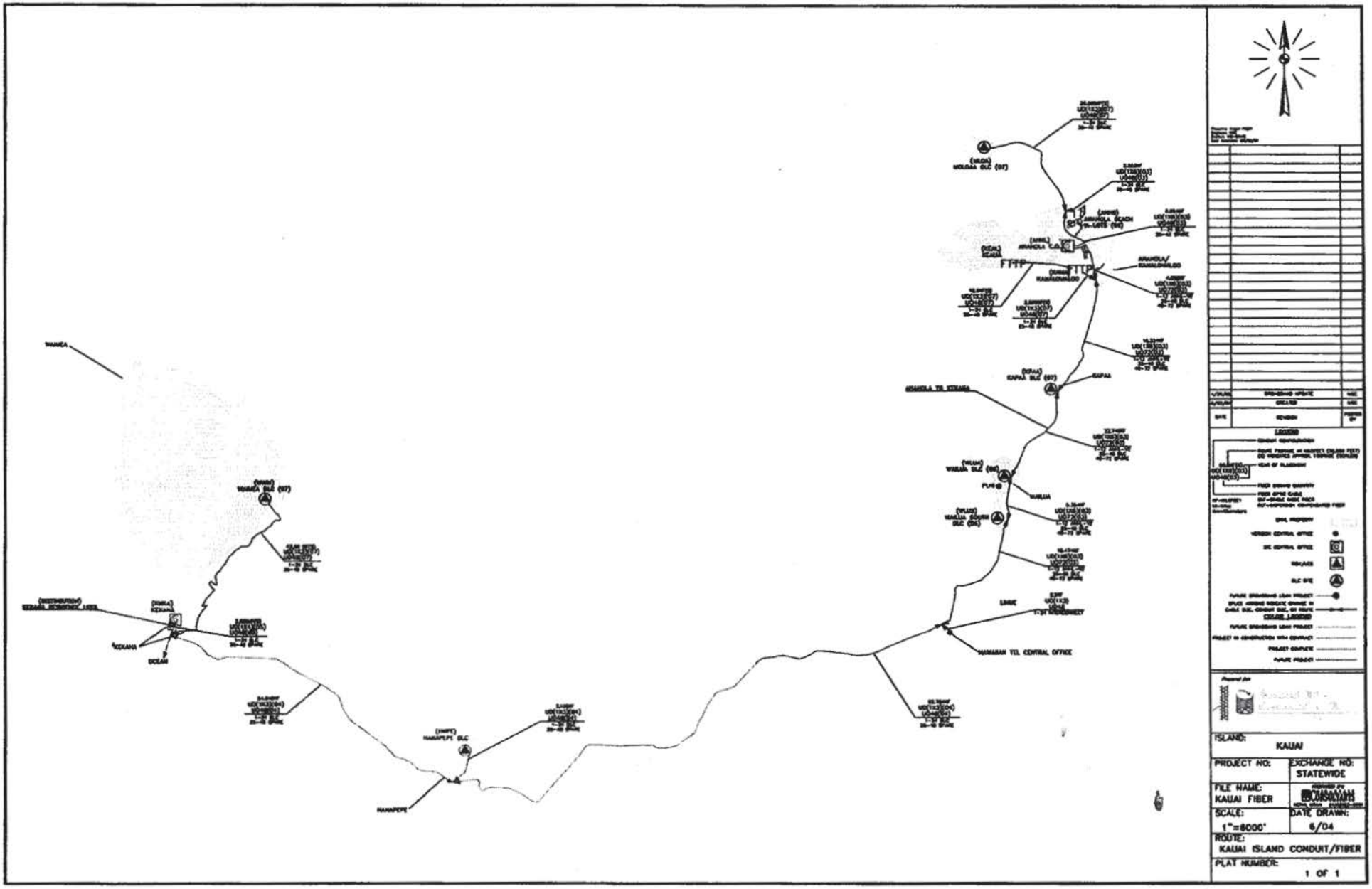
PLAT NUMBER: 1 OF 1	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WAIMEA DLC (97)
KEKAHA
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KAPAA
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WAILUA
WAILUA MARINA DLC (96)
LIHUE
HAWAIIAN TEL CENTRAL OFFICE
FTTP
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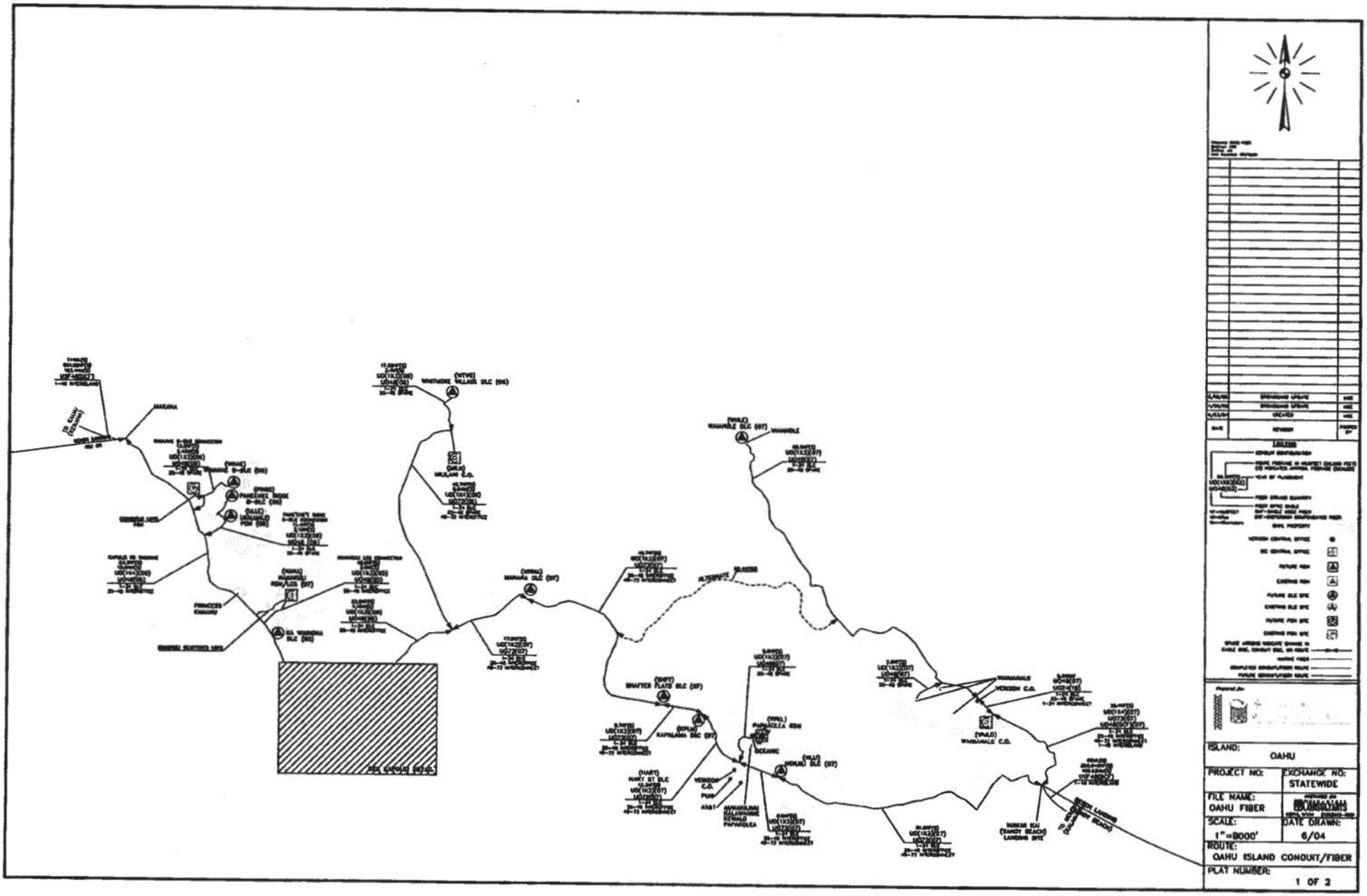
1 OF 1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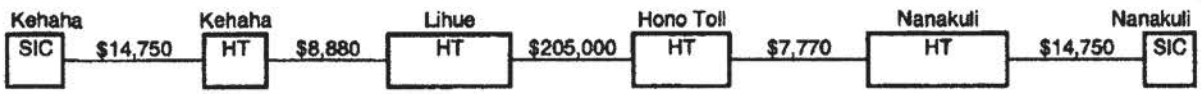
DATE DRAWN:
6/04
ROUTE:
OAHU ISLAND CONDUIT/FIBER
PLAT NUMBER:
1 OF 2

Market Cost for an OC-48
Interisland Network

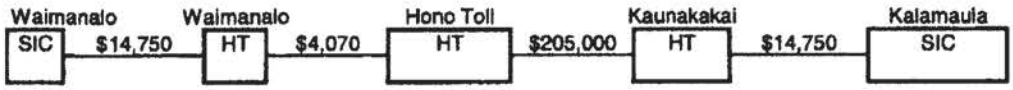
2006-2007 Commercial Pricing for an OC-48 Interisland Network from Hawaiian Telcom, Inc. was **$11,748,840 per year**
Source: Hawaiian Telcom, Inc. Tariff FCC No. 1 (Effective May 17, 2006)

Segment 1: Kekaha, Kauai to Nanakuli, Oahu



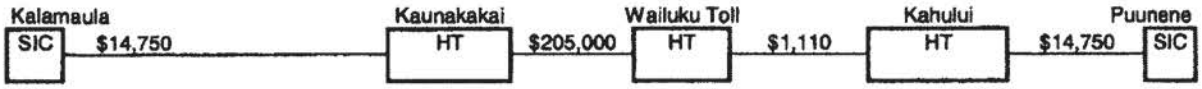
	Monthly Cost Per Segment
	$251,150

Segment 2: Waimanalo, Oahu to Kalamaula, Molokai



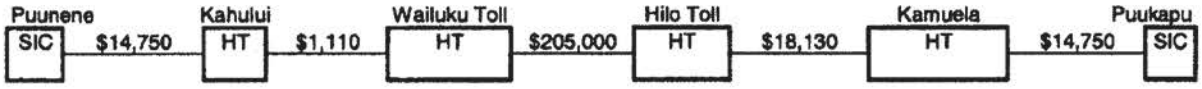
	$238,570

Segment 3: Kalamaula, Molokai to Puunene, Maui



	$235,610

Segment 4: Puunene, Maui to Puukapu, Hawaii



	$253,740

Actual OC-48 Lease Cost for all Segments:	$979,070
Months:	12
Annual Cost	**$ 11,748,840**

 (T)

20.9 Rates and Charges*, (cont'd.)

20.9.94 Custom Connect – Shared/Dedicated Interisland Transport - OC12/OC12c/STM4

	Monthly Rate
(Special USOC)	(TSRV1)
(Switched USOC)	(TSRVN)
	$81,600.00

20.9.95 Custom Connect – Shared/Dedicated Interisland Transport – OC48/OC48c

	Monthly Rate
(Special USOC)	(TSRV1)
(Switched USOC)	(TSRVN)
	$205,000.00

*These rates and charges apply to both Price Bands and N-MSA rates and charges.